

REMARKS / ARGUMENTS

The present application includes pending claims 1-31, all of which have been rejected. Claims 11-20 have been rejected under 35 U.S.C. § 101 as being non-statutory because the claimed invention is allegedly directed to non-statutory subject matter. The Applicant respectfully requests that the rejection to claims 11-20 under 35 U.S.C. § 101 be withdrawn in light of the argument below.

Claims 1-7, 9-17, and 29-31 are rejected under 35 U.S.C. § 102(e) as being anticipated by Ala-Laurila et al. (US 6,587,680, hereinafter "Laurila").

Claims 8, 18, and 28 are rejected under 35 U.S.C. § 103(a) as being anticipated over Laurila in view of Bhagwat et al. (US 6,651,105, hereinafter "Bhagwat").

The Applicant respectfully submits that claims 1-31 define patentable subject matter in view of the following remarks and arguments.

I. REJECTION OF CLAIMS 11-20 UNDER 35 U.S.C. § 101

The Applicant now turns to the rejection of claims 11-20 under 35 U.S.C. § 101 as being non-statutory because the claimed invention is allegedly directed to non-statutory subject matter. The Office Action states the following:

"A computer-readable media, having stored thereon, a computer program," can be any transmission media (cable, wire, wireless

media), signals or signal-carrying waves, and is therefore non-statutory.”

See the Office Action at page 4. The Examiner is referred to p. 52 of the “Interim Guideline for Examination of Patent Applications for Patent Subject Matter Eligibility” (IGPSME), which states the following:

Data structures not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer... Similarly, **computer programs claimed as computer listings per se**, i.e., the descriptions or expressions of the programs, are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program’s functionality to be realized.

See the IGPSME at pages 52-53. Even though data structures not claimed as embodied in computer-readable media, as well as computer programs claimed as computer listings per se, are not statutory subject matter, the Applicant points out that **claims 11-20 of the present invention do not fall under any of the above mentioned non-statutory subject matter categories.** The Examiner is furthermore referred to the following IGPSME citation:

In contrast, **a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships** between the computer program and the rest of the computer which permit the computer program’s functionality to be realized, **and is thus statutory.** See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Computer programs are often recited as part of a claim. **USPTO personnel should determine whether the computer program is**

being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program. Only when the claimed invention taken as a whole is directed to a mere program listing, i.e., to only its description or expression, is it descriptive material per se and hence nonstatutory.

See the IGPSME at page 53. Claims 11-20 in the present invention relate to **machine-readable storage for storing a computer program having at least one code section** for providing seamless connectivity and communication in a multi-band multi-protocol hybrid wired/wireless network. Furthermore, **the code sections may be executed by a machine for causing the machine to perform the method steps** recited by, for example, claims 1-10. Therefore, claims 11-20 define statutory subject matter as per the above IGPSME citation.

The Examiner is also referred to the following MPEP citation for support:

When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994)

See MPEP § 2106.01. The Applicant, therefore, submits that claims 11-20 are directed to statutory subject matter, and that the rejection of claims 11-20 under 35 USC § 101 should be withdrawn.

II. REJECTION UNDER 35 U.S.C. § 102

With regard to the anticipation rejections under 102(e), MPEP 2131 states that:

“[a] claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” See Manual of Patent Examining Procedure (MPEP) at 2131 (internal citation omitted) (emphasis added). Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.” See *id.* (internal citation omitted).

A. Laurila Does Not Anticipate Claims 1-7, 9-17, 19-27, and 29-31 .

The Applicant turns to the rejection of claims 1-7, 9-17, 19-27, and 29-31 under 35 U.S.C. § 102(e) as being anticipated by Laurila. Without conceding that Laurila qualifies as prior art under 35 U.S.C. 102(e), the Applicant respectfully traverses this rejection as follows.

A(1). Rejection of Independent Claims 1, 11 and 21

With regard to the rejection of independent claim 1 under 102(e), The Applicant submits that Laurila does not disclose or suggest at least the limitation of “providing authentication information related to said initial authentication to at least one of a second access point and a third access point,” as recited in claim 1 by the Applicant.

The Examiner states the following in the Final Office Action regarding

Laurila:

"Laurila discloses a method for providing seamless connectivity and communication in a multi-band, multi-protocol network (abstract), the method comprising: initially authenticating an access device upon said access device initiating communication with a first access point (fig. 3, col 8 lines 62-67, AP_old or the old access point that mobile terminal 12 is originally communicating and about to disconnect to hand-over to a new access point, or AP_new 114; SA or security association, read as authentication information, is retrieved from AP_old, suggesting that AP_old has stored authentication information of mobile terminal 12 for the original communication); providing authentication information related to said initial authentication to at least one of a second access point and a third access point (fig. 3, HO_request, a handover request containing authentication information is sent from AP_old to AP_new); and servicing said access device by one of said first access point, said second access point and said third access point based on said initial authentication (fig. 3, payload traffic or servicing can be resumed between the mobile terminal and the new AP)."

See the Final Office Action at page 4. The Examiner seems to equate Laurila's disclosure of the security association (SA) to the Applicant's "initial authentication," as recited in claim 1. The Applicant respectfully disagrees and points out that Laurila's "security function" and "authentication" are two separate and distinct functions. For example, as explained herein below, Laurila's mobile terminal MT 12 (asserted as an access device by the Examiner) and the new access point AP_new 114 are each separately and independently authenticated through a procedure of generating challenges and comparing the calculated

response with the correct response. There is no Security Association (SA) parameter involved in the authentication procedure. In other words, the SA parameter exchange procedure is separate and independent of the authentication procedure using challenges and responses.

The Examiner is referred to the following Laurila citation regarding the security association (SA):

“...a security association (SA) exists between mobile terminal 12 and the current or old-AP 14. That is, it will be assumed that mobile terminal 12 and AP 14 share the same common 5 set of keys and other information that is necessary **to achieve the security function(s).**”

See Laurila at col. 8 lines 2-6. The Applicant points out that Laurila clearly discloses that the SA utilizes a common set of keys, which are necessary to achieve security function(s). The Examiner is further referred to the following Laurila citation:

“In accordance with the invention, this established and shared **security association is transferred from old-AP 14 to new-AP 114, in a secure fashion**, as mobile terminal moves from cell 18 to cell 118. This transfer 10 is made in a very fast manner by **minimizing the number of message that are needed** to effect the transfer, and by **eliminating the use of public key encryption**. As a result, **the interruption of a payload traffic transfer to and from mobile terminal 12 is minimized**, any interruption of this type being very important for real-time services such as Voice over IP (VOIP) and video distribution.”

See Laurila at col. 8 lines 6-16. Instead of using SA for authentication procedure in the mobile terminal MT 12 and in the AP_new 114, as asserted by

the Examiner, Laurila discloses that the transfer of SA is for eliminating the use of public key encryption (for security) and for minimizing the additional messages needed (message encryption and decryption). Laurila clearly discloses the benefits of transferring SA, namely, to minimize delays in services such as VOIP and video distribution. **In other words, Laurila discloses that the SA parameter is retrieved and transferred for the purpose of minimizing the need of exchanging security messages that would otherwise cause undesirable delays in certain types of services. There is no disclosure or suggestion by Laurila that the SA is utilized as information to facilitate authentication in the MT 12 and the AP_new 114.**

Therefore, the Applicant maintains that Laurila does not disclose or suggest that "the SA is stored and read as authentication information, retrieved from AP_old," as asserted by the Examiner.

The Examiner is further referred to the following citations in Laurila regarding the authentication procedure, where the generation of challenges and calculating of responses between the MT 12 and the AP_new 114 are separated from the SA. Specifically, Laurila discloses the following:

"Later, when mobile terminal 12 moves from cell 18 and its AP 14 to cell 118 and its AP 114, authentication during the handover process is achieved by the invention's simple challenge/response procedure...
During the challenge/response procedure, new-AP 118 sends a challenge to mobile terminal 12, whereupon mobile terminal 12 sends a response to new-AP 118. In addition,

mobile terminal 12 authenticates new-AP 118 in a similar manner during the handover.”

See Laurila at col. 8 lines 23-34. Laurila discloses that new authentication is required for the mobile terminal 12 moving from cell 18 (from AP_old 14, asserted as the first access point by the Examiner) to the new cell 118 (to AP_new 114, asserted as the second access point by the Examiner) through a series of challenge and response procedure (ap_response, mt_response and ap_challenge, mt_challenge), which are separate and unrelated to the SA parameters.

For example, Fig. 2 of Laurila describes a forward handover process 20 as follows:

“FIG. 2 shows a forward handover (HO) process 20 in accordance with the invention, ... In forward handover process 20 the handover signaling is sent between mobile terminal (MT or mt) 12 and new-access point (AP or ap) 114. This type of handover is especially useful when radio link 21 is lost without prior warning.”

See Laurila at col. 8 lines 42-48. Laurila discloses that the mobile terminal MT 12 generates a challenge (mt_challenge) and is sent as a message MAC_REASSOCIATE_REQ to the AP_new 114. The AP_new 114 sends back a reply message MAC_AUTHENTICATE_REQ with a generated challenge (ap_challenge) and a calculated response (ap_response). The MT 12 performs an authentication (AP Authentication) by comparing the ap_response with the correct response. The MT 12 replies with a message MAC_AUTHENTICATE_RESP

carrying a response (mt_response) to the AP_new 114. The AP_new 114 performs an authentication (MT Authentication) by comparing the mt_response to the correct response. Upon successful authentication, the AP_new 114 returns a message MAC_REASSOCIATE_RESP to confirm successful handover so that the payload traffic can be resumed (see Laurila in Fig. 2). **The Applicant points out that no SA information is used in any of the authentication messages throughout the entire authentication process.**

Similarly, the Examiner is referred to Fig. 3 of Laurila, describing a backward handover process 30 as follows:

"FIG. 3 shows a backward handover (HO) process 30 in accordance with the invention. In backward handover process 30 handover is requested by mobile terminal 12 communication with old-AP 14 ... During a backward handover a beneficial option is to use the radio interface message 31 that carries the authentication challenge from old-AP 14 to mobile terminal 12 to also trigger backward handover 33. That is, authentication challenge 31 is used to indicate to mobile terminal 12 that it should disconnect from old-AP 14 and connect to new-AP 114 whereat a security association (SA) 35 has already been prepared for mobile terminal 12."

See Laurila at col. 10, lines 53-61. Laurila in Fig. 3 discloses that the AP_new 114 receives a handover request HO_REQUEST from the AP_old 14. The AP_new 114 generates a challenge (ap_challenge) and sent as a message HO_RESPONSE 35 to the first access point AP_old 14. The AP_old 14 forwards the same ap_challenge in a message MAC_DISASSOCIATE 31 to the MT 12 to

trigger a backward handover process. The mobile terminal MT 12 replies to the AP_new 114 with a message MAC_REASSOCIATE_REQ (mt_response, mt_challenge, other info). The AP_new 114 authenticates the mobile terminal 12 by comparing to the mt_response with a correct response. A new response ap_response is calculated based on the mt_challenge and is sent back to the mobile terminal MT 12 as a message MAC_REASSOCIATE_RESP_ENH (ap_response). The MT 12, authenticates the AP_new 114 by comparing to the ap_response with a correct response. A successful authentication procedure in both the AP_new and mobile terminal 12 confirms the backward handover and the payload traffic can be resumed. **The Applicant again points out that no SA information is used in any of the authentication messages throughout the entire authentication process.**

To summarize the above arguments, Laurila discloses that the SA parameters are for security information sharing during connection process when the MT 12 is moved from an AP_old 14 to an AP_new 114 to minimize interruptions caused by additional security messages. Laurila discloses that an authentication procedure is required in the hand over process, and the SA exchange is unrelated in any way to Laurila's authentication procedure.

Based on the foregoing arguments, the Applicant maintains that the SA parameter exchange is not "initial authentication," as asserted by the Examiner.

Therefore, Laurila does not disclose or suggest “providing authentication information related to said initial authentication to at least one of a second access point and a third access point,” as recited in claim 1 by the Applicant.

With regard to the rejection of independent claim 1 under 102(e), Applicant further submits that Laurila does not disclose or suggest at least the limitation of “servicing said access device by one of said first access point, said second access point and said third access point based on said initial authentication,” as recited in claim 1 by the Applicant.

Based on the foregoing arguments that the SA is not disclosed or suggested as “initial authentication” by Laurila, and new authentications are required by both the mobile terminal MT 12 and the AP_new 114 during the handover, subsequently, the Applicant maintains that Laurila does not disclose or suggest “servicing said access device by one of said first access point, said second access point and said third access point based on said initial authentication” as recited in claim 1 by the Applicant.

Accordingly, the Applicant respectfully submits that claim 1 is not anticipated by Laurila, and therefore is allowable. The Applicant respectfully requests that the rejection of claim 1 under 35 U.S.C. § 102(e) be withdrawn.

Independent claims 11 and 21 are similar in many respects to independent claim 1. Therefore, the Applicant respectfully submits that claims 11 and 21 are also allowable at least for the reasons stated above with regard to claim 1, and

respectfully requests that the rejection of claims 1, 11 and 21 under 35 U.S.C. § 102(e) be withdrawn.

Furthermore, the Applicant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of independent claims 1, 11 and 21, should such a need arise.

A(2). Dependent Claims 2-7, 9-10, 12-17, 19-20, 22-27 and 29-31

Dependent claims 2-7, 9-10, 12-17, 19-20, 22-27 and 29-31 depend directly or indirectly from independent claims 1, 11 and 21, respectively. Consequently, claims 2-7, 9-10, 12-17, 19-20, 22-27 and 29-31 are submitted to be allowable at least for the reasons stated above with regard to claim 1. The Applicant respectfully requests that the rejection of claims 2-7, 9-10, 12-17, 19-20, 22-27 and 29-31 under 35 U.S.C. § 102(e) be withdrawn.

Moreover, regarding the rejection of dependent claims 3, 13 and 23, the Applicant has reviewed the reference and portions of Laurila (Fig. 2 and 3). Based on the discussion above, the Applicant maintains that Laurila does not disclose that the SA as "initial authentication," as asserted by the Examiner. Furthermore, **new authentications are required** both in the mobile terminal MT 12 and in the AP_new 114 through generating a series of authentication response (ap_response, mt_response) and challenge (ap_challenge, mt_challenge) requests. Therefore, the Applicant maintains that Laurila does not disclose or

suggest "retrieving said stored initial authentication information by said second access point and said third access point," as recited by the Applicant in claims 3, 13 and 23.

Moreover, regarding the rejection of dependent claims 4, 14 and 24, the same rationale as used above with regard to claim 3 applies. Contrary to the Examiner's assertion, Laurila does not disclose that the SA is "initial authentication". Furthermore, **new authentications are required** both in the mobile terminal MT 12 and the AP_new 114 through generating a series of authentication response (ap_response, mt_response) and challenge (ap_challenge, mt_challenge) requests. Therefore, the Applicant maintains that Laurila does not disclose or suggest "retrieving said initial authentication information by said second access point when said access device migrates from a first coverage area associated with said first access point to a second coverage area associated with said second access point," as recited by the Applicant in claims 4, 14 and 24.

Moreover, regarding the rejection of dependent claims 5, 15 and 25, the same rationale as used above with regard to claim 3 applies. Contrary to the Examiner's assertion, Laurila does not disclose that the SA is "initial authentication". Furthermore, **new authentications are required** both in the mobile terminal MT 12 and the AP_new 114 through generating a series of authentication response (ap_response, mt_response) and challenge

(ap_challenge, mt_challenge) requests. Therefore, the Applicant maintains that Laurila does not disclose or suggest "retrieving said initial authentication information by said third access point when said access device migrates from one of said first coverage area and said second coverage area to a third coverage area associated with said third access point," as recited by the Applicant in claims 5, 15 and 25.

Moreover, regarding the rejection of dependent claims 6, 16 and 26, the same rationale as used above with regard to claim 3 applies. Contrary to the Examiner's assertion, Laurila does not disclose that the SA is "initial authentication". Furthermore, **new authentications are required** both in the mobile terminal MT 12 and the AP_new 114 through generating a series of authentication response (ap_response, mt_response) and challenge (ap_challenge, mt_challenge) requests. Therefore, the Applicant maintains that Laurila does not disclose or suggest "retrieving said initial authentication information upon said access device initiating communication with said second access point," as recited by the Applicant in claims 6, 16 and 26.

Moreover, regarding the rejection of dependent claims 7, 17 and 27, the same rationale as used above with regard to claim 6 applies. Contrary to the Examiner's assertion, Laurila does not disclose that the SA is "initial authentication". Furthermore, **new authentications are required** both in the mobile terminal MT 12 and the AP_new 114 through generating a series of

authentication response (ap_response, mt_response) and challenge (ap_challenge, mt_challenge) requests. Therefore, the Applicant maintains that Laurila does not disclose or suggest "**retrieving** said initial authentication information upon said **access device initiating communication with said third access point**," as recited by the Applicant in claims 7, 17 and 27.

Moreover, regarding the rejection of dependent claims 9, 19 and 29, the same rationale as used above with regard to claim 5 applies. Contrary to the Examiner's assertion, Laurila does not disclose that the SA is "initial authentication". Furthermore, **new authentications are required** both in the mobile terminal MT 12 and the AP_new 114 through generating a series of authentication response (ap_response, mt_response) and challenge (ap_challenge, mt_challenge) requests. Therefore, the Applicant maintains that Laurila does not disclose or suggest "transparently **transferring said initial authentication information to said second access point** during a handoff of said access device from said first access point to said second access point," as recited by the Applicant in claims 9, 19 and 29.

Moreover, regarding the rejection of dependent claims 10, 20 and 30, the same rationale as used above with regard to claim 5 applies. Contrary to the Examiner's assertion, Laurila does not disclose that the SA is "initial authentication". Furthermore, **new authentications are required** both in the mobile terminal MT 12 and the AP_new 114 through generating a series of

authentication response (ap_response, mt_response) and challenge (ap_challenge, mt_challenge) requests. Therefore, the Applicant maintains that Laurila does not disclose or suggest “transparently **transferring said initial authentication information to said third access point** during a handoff of said access device from one of said first access point and said second access point to said third access point,” as recited by the Applicant in claims 10, 20 and 30.

III. REJECTION UNDER 35 U.S.C. § 103

In order for a *prima facie* case of obviousness to be established, the Manual of Patent Examining Procedure (“MPEP”) states the following:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the teaching. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

See MPEP at § 2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added). Further, MPEP § 2143.01 states that “the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination,” and that

“although a prior art device ‘may be capable of being modified to run the way the apparatus is claimed, there must be a *suggestion or motivation in the reference* to do so” (citing *In re Mills*, 916 F.2d 680, 16 USPQ 2d 1430 (Fed. Cir. 1990)). Moreover, MPEP § 2143.01 also states that the level of ordinary skill in the art cannot be relied upon to provide the suggestion...,” citing *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 50 USPQ 2d 1161 (Fed. Cir. 1999). Additionally, if a *prima facie* case of obviousness is not established, the Applicant is under no obligation to submit evidence of nonobviousness.

The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

See MPEP at § 2142.

A. The Proposed Combination of Laurila in view of Bhagwat Does Not Render Claims 8, 18, 28 Unpatentable

The Applicant turns to the rejection of claims 8, 18, and 28 under 35 U.S.C. § 103(a) as being anticipated over Laurila in view of Bhagwat.

With regard to the rejection of dependent claims 8, 18 and 28, the Examiner, at page 8 of the Final Office Action, concedes that “Laurila does not disclose distributing said initial authentication information to said second access point and said third access point upon said initial authenticating.” The Examiner looks to Bhagwat’s Fig. 5 to teach the deficiencies of Laurila.

Regarding claims 8, 18, 28, the Examiner uses the following Bhagwat citation:

"However, Bhagwat discloses distributing said initial authentication information to said second access point and said third access point upon said initial authenticating (fig.5, authentication server, col 7 lines 34-42, col. 10 lines 14-34, a centralized authentication server stores authentication information of mobile devices as they move from one access point to the next)...to implement a centralized authentication server for distributing authentication information in a dynamic fashion among PPP backend servers and further access points (Bhagwat, col. 10 lines 22-26)."

See the Final Office Action at page 8. The Examiner uses the following Bhagwat citations:

"...one embodiment uses a central PPP authentication database for all PPP backend servers. A PPP server consults this central server to retrieve the authentication information of a mobile user."

See Bhagwat at col. 10, lines 27-30. The Applicant points out that Bhagwat discloses a mobile user retrieving authentication information from the central PPP authentication data base in the central server. Bhagwat, however, does not disclose "distributing said initial authentication information to said second access point and said third access point upon said initial authenticating," The Applicant has further reviewed the citations in Bhagwat (fig.5, authentication server, col 7 lines 34-42, col. 10 lines 14-34) and cannot find support to the assertion made by the Examiner on the disclosure of the claimed limitation of "distributing said initial authentication information to said second access point

and said third access point upon said initial authenticating,” as recited in claims 8, 18 and 28 by the Applicant. Therefore, the Applicant submits that claims 8, 18 and 28 are also allowable.

Moreover, dependent claims 8, 18 and 28 depend from independent claims 1, 11 and 21, respectively. Consequently, claims 8, 18 and 28 are also respectfully submitted to be allowable at least for the reasons stated above with regard to claim 1. The Applicant respectfully requests that the rejection of claims 8, 18 and 28 under 35 U.S.C. § 103(a) be withdrawn.

Furthermore, the Applicant reserves the right to argue additional reasons beyond those set forth herein to support the allowability of dependent claims 8, 18 and 28, should such a need arise.

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Reply to Final Office Action of April 3, 2008

CONCLUSION

Based on at least the foregoing, the Applicant believes that all claims 1-31 are in condition for allowance. If the Examiner disagrees, the Applicant respectfully requests a telephone interview, and requests that the Examiner telephone the undersigned Patent Agent at (312) 775-8093.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Ltd., Account No. 13-0017.

A Notice of Allowability is courteously solicited.

Respectfully submitted,

Date: May 05, 2008

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